UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/905,356	08/04/97	BELGARD R	RAB-97-002

LM12/0515

PETER COURTURE
LAW+
993 HIGHLAND CIRCLE
LOS ALTOS CA 94024

EXAMINER
NGUYEN, T

ART UNIT	PAPER NUMBER
2759	15

DATE MAILED: 05/15/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/905,356	Belgard
Examiner	**Group Art Unit**
T Nguyen	2759

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 3/22/00.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 38-112 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☒ Claim(s) 38-53, 58-81, 83-112 is/are allowed.

☒ Claim(s) 54 is/are rejected.

☒ Claim(s) 55, 56, 57, 82 is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 11 9(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 1 7.2(a)).

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

DETAILED ACTION

1. This is a response to the appeal brief, filed 3/22/00.

2. Claims 38-112 are pending.

Response to Arguments

3. After further consideration, Applicant's arguments with respect to claims 38-53,55-112 are deemed persuasive to overcome the rejections to the claims under the prior art of record. Applicant pointed out that the Toy reference does not teach an independent segmentation/paging system and cannot be combined with Crawford's system. Further, Applicant argued that Toy does not generate any linear address, thus cannot produce speculative physical addresses, as claimed. The Examiner concurs with Applicant on claims 38-54,55-112. However, claim 54 does not claim, when broadly interpreted, is still read upon by Crawford because it only claims generating physical addresses through segmentation and paging, which is taught by Crawford.

Claim Objections

4. Claims 57,82 are objected to because of the following informalities:

These claims should be modified to read as follows:

57. A system for performing address translations using a first operation to convert a first virtual address having both a segment identifier portion and a segment offset portion to a first linear address, such that all portions of the virtual address are considered when converting said

virtual address into the first linear address and a second operation to convert said first linear address to a first physical address, the system further including:

an address translation memory, accessible by said system while said first operation is converting said first virtual address, and capable of storing prior physical address information generated during a prior address translation by said second operation based on a prior virtual address;

wherein a fast physical address can be generated based on the prior physical address information and said first linear address before said second operation has completed converting said first linear address to the first physical address.

82. A system for performing memory references in a processor which employs both segmentation and optional independent paging during an address translation, said system comprising:

means for performing an address translation by generating a first physical address from a first virtual address by first calculating a first linear address based on both a first segment identifier and first offset associated with the first virtual address, such that all of said first virtual address is translated, and then calculating the first physical address based on the first calculated linear address; and

a fast physical memory access circuit for generating a fast memory reference, which fast memory reference is based on physical address information from said means for performing an address translation [means];

a bus interface circuit for initiating a fast memory access to a memory subsystem based on said fast memory reference.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claim 54 is rejected under 35 U.S.C. 102(e) as being anticipated by Crawford (US 5,321,836).

As to claim 54:

Crawford discloses a virtual memory management method and apparatus using segmentation and optional, independent paging mechanism a system/method for performing address translation comprising:

a virtual to linear address converter circuit for generating a calculated linear address based on a virtual address (address translator; Figures 2 & 3; linear address is generated from a virtual address), said virtual address having both a segment identifier and a segment offset (Figure 2, virtual address has segment id and offset), and said calculated linear address being based on all of

said virtual address; and a linear to physical address converter circuit for generating a calculated physical address based on the calculated linear address, the calculated physical address including a calculated page frame and a calculated page offset (the actual physical address is calculated from the linear address including a page frame and page offset through paging, Figure 3). Since Applicant did not distinguish the difference between the claimed **fast** physical address circuit and the claimed linear to physical address converter, the Examiner will interpret them to have the same function: to generate a physical address from a linear address, page frame, and page offset. The linear to address calculator (Figure 3) of Crawford meets the limitation of the fast physical address circuit since it also generates a physical address from a linear address, page frame and offset. The generated (fast) physical address can be used to reference the memory.

Allowable Subject Matter

7. Claims 38-53,57-112 are allowable for reasons stated above.

8. Claims 55-56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 55, the prior art of record does not teach the (fast) physical address is based on linear address information relating to the virtual address and physical address information relating to a **prior** virtual address.

As to claim 56, the prior art of record does not the virtual address is partially converted to a linear address by the fast physical address circuit and is combined with physical address information relating to a **prior** virtual address to generate the fast physical address.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Than Nguyen whose telephone number is (703) 305-3866.

10. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Than Nguyen
May 9, 2000